

FAQ

Q I've read that different LCD monitor manufacturers have different policies when it comes to dead or stuck pixels. What are these policies, and why don't manufacturers simply replace screens with defective pixels?

A Due to the complex electronics in an LCD, it's inevitable that dead pixels will occur on any manufacturing line. If a manufacturer were to scrap every LCD with a defective pixel, the cost of monitors would be much higher.

Instead, each manufacturer has a replacement policy that states how many dead pixels it considers acceptable, and takes into account their location and type (whether they're stuck on or off). While the exact policy differs between manufacturers, most reputable companies adhere to the ISO 13406-2 standard, which governs how many dead pixels are acceptable for a given size of display. Most monitors are ISO 13406-2 Class II compliant, which means they can have a maximum of two defective pixels per million. Check the documentation that came with your monitor for detailed information.

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Fix your hardware

Have you got a bent processor pin or a CD you can't read? Fret no more, because Chris Finnamore is here to show you how to fix some of the most common hardware faults

Your PC may look tough on the outside, but it's full of very delicate components. When building or upgrading your computer, it's all too easy to bend your processor's pins, damage the motherboard's processor socket or break your hard disk's connector.

PCs also go wrong of their own accord, and LCD screens can have dead pixels, even when you've only just bought them. Fortunately, all is not lost. With a little care and know-how you can fix even the most sensitive components. This guide will take you through a few common PC component breakages, showing you how to spot what's wrong and how to put it right. You don't even need any specialist tools – just the usual ones you'd find in any toolbox. Read on to find out how to fix everything from your processor to your monitor, and even rescue your scratched driver CD.

If you've got any tips for repairing hardware that we haven't mentioned, drop us an email.

PROBLEM Your Intel Socket 478 or AMD processor has bent pins

AMD and older Intel Socket 478 processors are extremely delicate. The bottom of the processor is covered with hundreds of pins that are easily bent if you insert or remove the processor at an angle. Even worse, if you drop a processor on the floor (which we have done several times) the delicate pins on the bottom may end up squashed and pointing in all directions. Even a single pin that's slightly out of place will stop the processor fitting in your motherboard's socket, so if you're having trouble reinstalling your processor, you've probably got at least one bent pin.

However, with a bit of time and a lot of care, it's possible to save your processor. Hold the chip up to the light by its edges and look along the edge of the processor down the rows and then columns of pins. It should be obvious if any are out of place. If so, take a credit card and, with the edge of the card against the processor's surface, slide it down the row or column that has the bent pin or pins. Use the card gently to straighten the pins by nudging them very carefully into an upright position. It's essential that you're incredibly careful, as too much pressure could break a pin off completely, which would render the processor irreparable. If a pin is very bent and there's not enough space for a credit card, use the tip of a sharp knife to ease it back into position.



▲ Use a credit card to straighten the pins – gently!

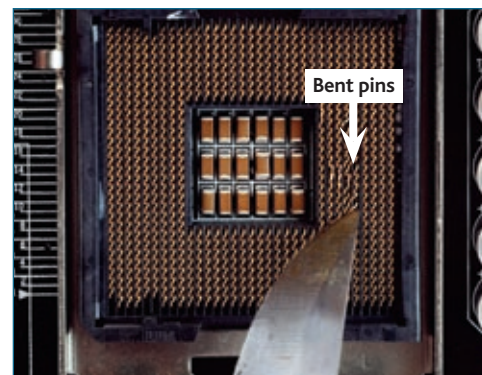
PROBLEM Your Intel LGA775 Socket has bent pins

Intel LGA775 processors have a very different design to AMD and older Intel processors. The bottom of the processor is covered with a series of flat metal contacts, while the pins themselves are in the socket on the motherboard. The processor sits on top of these.

The pins are actually mounted on bent pieces of metal, which gives them a bit of spring and pushes them up to make firm contact with the processor. When you insert or remove a processor it's easy to bend or move the pins so that they no longer make contact.

A bent pin won't prevent you inserting your processor in the socket – you'll realise that there's a problem only when your PC refuses to switch on. To check the processor socket, you'll need to perform a physical inspection. Look carefully at the socket from above. The pattern of pins should be completely ordered and symmetrical, so it should be obvious if anything is awry. The pins themselves are extremely delicate, perhaps more so than the pins on the bottom of AMD processors.

Using a sharp knife or a pin, try to ease the socket's pins back into position, but be very careful and make sure you don't cause a short circuit by leaving two pins touching. You're aiming to get the vertical part of each pin back into an upright position and equidistant from the surrounding pins. You may not be able to get the pins to look exactly right, but if their location is approximately right they should still make contact with the base of the processor. Put your processor back in, replace the cooler and try to boot the PC. If nothing has changed, you may have to try adjusting the pins again.



▲ Pins should be upright and equally spaced

PROBLEM Bent pins on an IDE or floppy drive connector

IDE and floppy drive cables fit tightly in the back of their respective drives, so you're far less likely to break their connectors by tugging the cable than you are with a SATA disk. However, they are much fiddlier to plug and unplug than SATA cables, and this can cause damage. If you remove the cable at an angle or don't plug it in straight, you can bend the pins on the back of the drive or even flatten them.

It's usually fairly easy to see when these pins are bent. Often only the pins on one side of the connector are bent, because the cable was removed at an angle. We find that a sharp knife or a small flat-head



▲ Use long-nosed pliers to pull out sunken pins

screwdriver is the best tool to use for straightening the pins. As with the processor pins, too much bending and unbending will fatigue the metal and break the pin, so be very gentle and try to get it right first time.

To pull out a submerged pin, use a pair of long-nosed pliers. Grip the pin and slowly pull it back out. Once all the pins are straight, you can plug the cable back in. If only the pins on one side of the connector are bent and you can't quite get them straight, don't worry. Simply push the cable on to the bent pins first, and then straighten the cable to plug it all the way in.

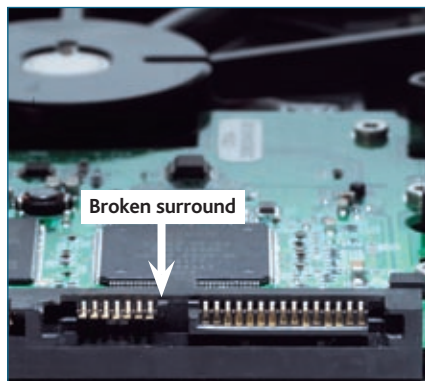
PROBLEM Your hard disk's SATA connector is broken

As we explained in *PC Builder* last month, SATA connectors are fairly flimsy and are designed to be removed and inserted a maximum of 50 times. Even if you unplug your hard disk only once, you can snap the connector on the back of the hard disk if you're not careful. The data cable connector on the back of a SATA drive consists of six flat metal pins with a plastic surround to hold the cable in place. Although the pins look as if they are attached to the surround, they are in fact separate. An accidental tug on the SATA cable can break the plastic surround clean off and leave the pins exposed, but it's still possible to save your hard disk.

Retrieve the plastic surround and insert it back into the SATA cable's connector. Both the connector and the surround are L-shaped, so it fits only one way. Match the cable connector's



▲ With the surround inserted, your SATA cable connector should look like the plug on the right



▲ With the plastic surround missing, the connector's pins float free

metal pins with the pins on the back of the drive and plug it back in. The connector will wobble a bit, but it should still work. If you're worried about durability, reinforce the connection with some electrical tape.

PROBLEM Your optical drive can't read a scratched CD or DVD

CDs and DVDs are delicate, and no matter how careful you are they often end up scratched. CDs and DVDs are constructed from layers, with the data layer on the top of the disc and a protective plastic covering on the bottom. The optical drive's laser reads the data layer through this protective plastic. If the data layer on top of the disc is damaged, your data is lost, but if only the protective plastic layer is damaged, your data is still safe. The optical drive's laser is simply having trouble reading the data through the scratches.

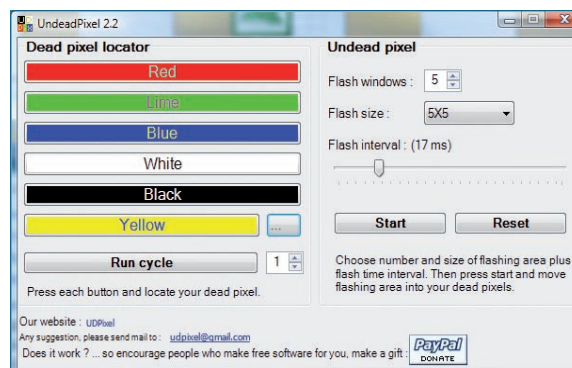
Skipping music, jumping video and read errors are all signs of a damaged disc. The first thing to do is to clean the disc. Finger marks and dust can cause as many problems as scratches. The best way to clean a CD or DVD is to use washing-up liquid and a lint-free cloth. Don't use a dishcloth or sponge, as these can scratch the surface. Clean the entire surface, rinse it thoroughly to remove any residue and dry with a lint-free cloth. Hold the disc up to the light to check that the data surface is clean and free of fluff.

If the newly cleaned disc still has problems, it's probably scratched. Again, hold the disc up to the light and look for scratches. Most optical drives can tolerate minor scratches, but anything too deep will cause read errors. The best way to remove scratches is to use an abrasive. T-cut or car polish will do the job, but we find that toothpaste is just as good. Using a soft cotton swab with a blob of toothpaste on it, gently polish away the scratches. Once you've finished polishing, wash the disc with fresh water and make sure you get rid of any leftover toothpaste. Dry it with your lint-free cloth, and try to read it again. If you still experience errors, look for any more scratches and repeat the polishing process.

PROBLEM Monitor has stuck pixels

LCD monitors can suffer from so-called dead pixels. There are plenty of explanations, names and varying descriptions of what actually constitutes a dead pixel, but we'll refer to all pixel problems as dead pixels, as it's the most common name. There are two types of dead pixel: stuck on and stuck off. Stuck on pixels permanently display red, blue or green, while stuck off pixels are black. To see if you have any dead pixels, download Undead Pixel 2.2 from (www.tinyurl.com/26b4bx). Cycle through the coloured backgrounds listed under Dead pixel locator. Any pixels that are stuck on one colour or are black should be visible against the varying backgrounds. Wipe each potential dead pixel with a lint-free cloth to ensure it isn't just dirt.

Manufacturers have different policies for dealing with dead or stuck pixels. Some will replace the screen if it has just one malfunctioning pixel, while others have varying degrees of tolerance. If you have a dead pixel and your manufacturer won't replace your screen, there are a couple of things you can try.



▲ UndeadPixel tests whether your screen has any dead pixels, and helps you fix them

Before you start, be aware that you may do your screen more harm than good. You should consider how annoying the pixel is. If it's tucked away at the edge of the screen, you probably notice it only every now and then, and ignoring it may be the best course of action. If it's slap in the middle of your display, however, the pixel may be harder to ignore.

The first method is Undead Pixel. Select the number of Flash windows according to the number of dead pixels you have found and Click Start. You'll see a series of boxes that cycle quickly through a range of colours, turning your monitor's pixels on and off in rapid succession. Drag each box over a dead pixel using your mouse. You'll need to leave the process running for an hour or two, and should click the Stop button when it's done. Don't forget to stop your PC automatically cutting the power to the monitor or going into sleep mode, as this will prevent the process running.

If Undead Pixel doesn't work, there is a physical method that plenty of people claim to have had success with, although it sounds more like an old wives' tale to us. It involves putting pressure on your screen to make sure there's an even distribution of liquid crystals behind each pixel. Putting pressure on the screen can cause a lot of damage, though, so take care to avoid causing irreparable harm. If you're worried about causing further damage, don't try this.

You'll need a cloth and a ballpoint pen. Make the cloth damp to soften it so you don't scratch your screen. With your screen on, note the position of the dead pixel by measuring its position from the bottom and edge of the screen. Fold the cloth double so that you don't poke the pen through the washcloth and get ink on the screen. Leave your PC on, but turn your screen off. Put the washcloth over the end of the pen to make a point, then gently apply pressure to where you measured the dead pixel to be. Try to push only on the dead pixel and not on the pixels around it. Now turn your screen on while applying pressure. When the screen's on, take the pressure off and the pixel should be fixed.

If neither method has made any difference, then you've got a truly dead pixel that's probably failed due to a transistor malfunction and you'll be unable to repair it. ☹

Next month

SLIPSTREAMING

Make installing Windows XP simple with a custom-made installation CD